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ABSTRACT

This paper analyzes the relationship between existing secondary and technical schools and employment in the modern private sector of the Ivory Coast. Enrollments in secondary and technical schools are examined, and the social demand for education, characteristics of the Ivorian labor market, and the matching of labor supply and demand are discussed. It is suggested that training should be directed toward those job categories with large shortages, and that an expansion of the technical school system would help reduce a predicted shortage of qualified employees. (Author/JEG)

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LABOR MARKETS AND THE SOCIAL DEMAND FOR EDUCATION: AN ANALYSIS OF THE IVORY COAST

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Stuart Wells

March 1977

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INTRODUCTION

EDUCATION INVESTMENT

A decision was made several years ago to extend six years of primary education to all children in the Ivory Coast. The emphasis on new education investment has now shifted from the television-based primary system to a new three-year post-primary cycle. There is currently a complete secondary system available to only a small segment of the student population (approximately 10%). Technical schools are also open to accommodate approximately 5% of the student population. The precise content of the new post-primary system is as yet undecided. It may be directed toward general education, more specific training for employment in the modern sector, or rural development.

In this paper we analyze the relationship between existing secondary and technical schools and employment in the "modern" private sector. We concentrate on this sector of the economy as education is often considered to be an important step toward modernization and a mechanism for preparing individuals for employment in this sector. However, one must keep in mind that the country is predominantly rural and industrial sector in any given year is probably available to only 5% of the Ivorian labor force (approximately 130,000 positions for a work force of approximately 2.5 to 3 million). Employment in the public (government positions) and semi-public (publicly owned industries) sectors are available to an additional 2.5% of the labor force. Education appropriate for these sectors is probably similar to that for the "modern" private sector.

One may discuss a wide variety of potential benefits for educational systems. An important aspect of these benefits is the view of education as an individual and social investment. That is, increased education could add to increased job productivity and increased work opportunities. A major development problem for many countries is the achievement of a balance between investment in education and investment in other sectors of the economy. If there is insufficient investment in education, development may be retarded as appropriately trained people will not be available to fill job openings. Alternatively, if education investment is too high, then fewer resources will be available for investment in other sectors and many individuals will have problems finding positions commensurate with their abilities. The push to large investments in education is high as education tends to be subsidized and alternative work opportunities tend to be limited, leading individuals to demand additional education even if there is no certainty of a job.

It is, of course, possible that the greatest benefits to the proposed post-primary cycle would be obtained if education was directed toward rural development. Furthermore, there are potential non-economic benefits of education which are totally ignored in this analysis.

EDUCATION SYSTEM IN THE IVORY COAST

Coincident with the utilization of television for all subjects in all primary grades (labeled CP1, CP2, CE1, CE2, CM1, CM2 and corresponding to grades one through six, respectively) education is being extended to all areas of the country to have virtually complete participation. Students who successfully complete the primary curriculum are eligible to compete

to enter the secondary system. There are three "cycles" in the present Ivorian secondary system. The first cycle is a four-year cycle for grades sixième, cinquième, quatrième, and troisième (corresponding to grades seven through ten in the U.S., respectively). Students who complete this cycle then compete to enter the remaining two cycles (each cycle is one year): deuxième (grade eleven) and terminal (grade twelve). Students completing all of the secondary cycles may be awarded a BAC, BS, or BTEC certificate and compete to enter the university system.

Students who complete troisième but do not enter the remainder of the secondary cycle may compete to enter technical training schools for programs of two to three years duration and may receive a BEP, BEI, or BEC certificate. Additionally, there are some technical training programs available to students who do not complete the first cycle of secondary or who have not attended primary. They would receive a BEPC or CAP at the conclusion of their technical training. However, there are often many students competing for these programs who have completed the first cycle. We examine enrollments in secondary and technical schools in the third section of the paper.

FORMAT OF THE PAPER

For the most part, the French words for schools, grade levels, and general employment classifications are used throughout the paper to avoid confusion. Exact translations are less important than an understanding of the hierarchy or relationships. The remaining five sections of the paper contain discussions of the social demand for education, secondary and technical school enrollments, characteristics of the labor market in

the Ivory Coast, the matching of labor supply and labor demand, and general concluding remarks.

The analysis on the private sector of the economy is based on data drawn from a variety of publications of the Ministere du Plan and the Ministere de l'Enseignment techn'que et de la Formation Professionnelle.

SOCIAL DEMAND FOR EDUCATION

There is substantial social demand for additional education in the Ivory Coast. This demand is evidenced by the actual and projected enrollments for primary grades presented in Table 1. As one can see, there is a general decline in enrollments from CP1 to CM1 in any single year or any sequence of years. For example, the students in CP1 in 1975/76 (136,764 students) will become the students in CP2 in 1976/77 (126,493 students). There is, of course, some decline due to dropouts and repetitions. However, by the time this group of students reaches CM2 (1980/81), there are projected to be 132,859 students. This represents an increase of nearly 50%. One may observe similar increases from CM1 to the corresponding CM2. The reason for the increase in enrollments is simple: there is an extraordinarily high repetition rate of students who were not able to gain entry into the secondary system. These students are repeating an entire school year in order to obtain another chance to take the examinations for the secondary system.

It is likely that this repetition is less an evidence of a strong desire for more learning, but rather a recognition that education is a potential path to employment and higher earning capacities. If one looks at the data presented in Table 2, one can observe substantial income returns to completion of the first cycle of secondary school or the attainment of a BEPC or CAP certificate. However, the returns are very small for completion of primary school or attaining some secondary education.

A rough approximation of private rate of returns for additional education may be calculated. Assume that "some primary" education is four years of education and "some secondary" education is two years. To

TABLE 1

Projections of Primary Enrollments by Grade Level

YEAR	CP1	CP2	CE1	CE2	CM1	CM2
1975/76 (Actual)	135,764	114,120	109,270	95,095	97,156	120,302
1976/77	153,130	126,493	114,742	102,571	98,232	134,420
1977/78	161,367	146,453	124,068	111,720	104,857	145,092
1978/79	159,999	155,383	145,840	119,905	115,833	154,931
1979/80	180,625	163,917	154,252	143,056	122,172	170,656
1980/81	193,236	174,181	162,212	153,140	143,813	182,859
1981/82	206,138	186,458	172,244	151,155	155,883	207,097
1982/83	219,985	198,953	183,881	170,781	16 ,422	230,141
1983/84	239,513	212,331	198,208	181,730	171,566	247,480
1984/85	251,130	230,966	209,309	190,523	181,983	262,673
1985/86	270,222	242,585	227,573	206,509	192,839	279,940

Source: Service Autonme and DOGE: PROJEDOR, Version 04.

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TABLE 2

Annual Salary Level by Education Level
(In 1,000 1974 CFA Francs)*

Level of Education (or certificate)		Salary Level	No. Positions Surveyed
INCREASING EDUCATION →	Illiterate	11	22,841
	Some Primary	25	2,114
	Primary Cycle Completed	27	5,995
	Less than 4 years Secondary	29	1,336
	Completed 4-yr. First Cycle of Secondary (BEPC, CAP)	55	2,405
	Some Second Cycle of Secondary (BEP, BEI, BEC)	99	614
	Three Cycles (6 years) Secondary Completed (BAC, BS, BTEC)	128	339
	(IUT, BTS)	158	123
	Grand Schools	230	405
	Not Declared	32	5,597

*The exchange rate is approximately 250 CFA Francs = $1 U.S. The CFA Franc is fixed at 50 CFA Francs = 1 F. Fr.

Source: Extracted from Manpower Surveys of the Ministere Du Plan.

calculate the rate of return to additional schooling, one counts as costs the income foregone during the time in school and counts as benefits the difference between the income to the higher and lower levels of schooling. For example, to calculate the private rate of return to "some primary" education, we consider costs of 11,000 CFA per year for four years and benefits of 14,000 CFA per year for the next 40 years (an assumed working life). With similar calculations, one can obtain private rates of return to other levels of education by using the formula

$$\sum_{k=1}^{j} \frac{C_k}{(1+r)^k} = \sum_{k=j}^{m} \frac{B_k}{(1+r)^k}$$

where C_k is the income foregone in year k

B_k is the income benefit in year k, and

r is the private rate of return

This is an extremely rough, approximate analysis. We are assuming that the income difference between education levels observed in a single year is valid for a person's entire working lifetime. Furthermore, the salary data used is for working people. The real income opportunity to a person deciding to undertake additional education is probably lower as there are very limited employment opportunities for school-age children. This factor has the impact of raising the rates of return. Factors not accounted for which could reduce the rates of return reported include the direct costs of schooling and unemployment possibilities. Therefore, the rates reported should be regarded only as a guide to relative differences among education levels.

One obtains the following approximate private rates of return (where the rate is always to the next increment of schooling):

Level of Schooling	Private Rate of Return
Illiterate	
Some Primary	23%
Primary Complete	-1%
Some Secondary	-1%
Secondary First Cycle Complete	38%
All Secondary Complete	52%
Grand School	17%

As shown above, the rate of return for some primary education is 23% as compared with illiteracy and 38% is the rate of return to completion of the first cycle of secondary as compared with some secondary. Social rates of return would be even lower when the full costs of schooling were included. While the rates may not be exact, the large differences between levels are probably indicative of the private returns of incremental levels of schooling. There is a large return to some schooling (probably literacy or numeracy). There is a very small, or a negative return to completing primary school or obtaining some secondary education. In income terms, the individual is probably better off without this training.

In Table 1, we observed a high social demand for schooling beyond the primary level. It is apparent that this demand occurs with the hope of completing the first cycle of secondary, the entire secondary system, or a technical training program.

These rates of return also raise the issue of the questionable benefits of a three year post primary education which will apparently not

lead to any new employment opportunities. As the social demand for education is probably tied to the desire for positions with higher income, it is unlikely that this social demand will be satisfied with the availability of additional education which does not change employment prospects.

SECONDARY AND TECHNICAL ENROLLMENTS

One can understand the heavy competition for places in the secondary system by examining enrollment levels in both the secondary and technical school system. In Table 3, 1973/74 enrollments for all secondary schools (public, private-religious, and private-nonreligious) are reported. The narrowing pyramid of enrollments begun in the primary system continues to the secondary system.

TABLE 3

Enrollments, Promotion Rates, Repetition Rates, and Dropout Rates for Secondary Education, 1973/74

Grade Level	Enrollment	Promotion Rate	Repetition Rate	Dropout Rate[1]
Sixième	24,277[2]	78.5%	10.5%	11 %
Cinquième	20,894	76.2%	11.1%	12.7%
Quatrième	18,736	70.0%	14.0%	15.0%
Troisième	13,784	29.1%	16.6%	54.2%[3]
Deuxième	4,854	64.3%	11.4%	24.3%
Terminal	3,450	77.0%	11.5%	11.5%

Source: Le Rendement Interne de l'Enseignement du Second Degre de 1973/74 a 1974/75, Service Autunume Des Etudes Generales, De Planification Et Des Statistiques, Ministere De L'Education Nationale.

[1]Students may leave the grade level at any point during the academic year, including the end, if they have failed the tests for promotion.

[2]Total enrollments for public, private-religious, and private-nonreligious, were 15,268, 2,136, and 6,873, respectively. The rates for all enrollments is approximately three males for each female.

[3]Includes students who successfully completed the first cycle of secondary but were unable to enter further secondary education.

There were 24,277 students in the first yerr of the secondary system in 1973/74. With a 10.5% repetition rate, the number of new entrants was closer to 22,000. This probably represents a rate of promotion from CM2 of the previous year of approximately 25% (counting the high repetition rates in CM2). Of the students who enter the secondary system, only 12% go beyond the troisième level and of these, 50% will be able to enter the university. Therefore, for every 1,000 students who enter CP1, 150 will enter secondary school, 18 will continue beyond troisième, 34 will complete troisième and not continue, and 9 will enter the higher education system. These rates and student flows are only approximate as one would need to follow several cohorts of students to determine the real flow of students. Approximately one-third of the students who enter secondary school do not complete troisième and, as seen from the rate of return calculation, do not seem to add to their earnings ability.

Technical schools provide another potential path to success for students. Table 4 contains total enrollments for selected technical schools from 1969/70 to 1974/75. In 1974/75, total enrollments were approximately 5,700. However, new technical schools added an additional 2,140 places in 1975/76. There are additional enrollments of approximately 6,000 students in private and business-run technical schools. As most of the technical schools have three year programs, there are less than 5,000 new places each year. Of the new places, approximately 30% are available to students with some or no secondary schooling. To this figure one must add, however, there are approximately 5,000 students each year who have completed the first cycle of secondary and it is likely that the competition from these better trained students further reduces the number of places available to

TABLE 4

Enrollment in Technical Schools with Admission Standards
1969/70 to 1974/75

School[1]	Admission[2] Standards	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
ABIDJAN							
LTA[3]	Troisième	1,113	1,178	1,386	1,549	1,458	1,554
GTA	Troisième	155	212	249	212	175	193
CETI	Cinquième, Troisième	399	432	404	392	377	367
CETC	Troisième	442	369	340	336	354	338
CETF	Troisième	246	266	278	250	250	189
CTF	Troisième	246	266	278	250	250	72
CTUF	Primary	205	210	217	170	118	147
CFPMB	By Testing		80	74	67	60	60
CMS	Quatrième and Age	12	26	24	59	50	24
CPL	Skill and Age		38	34	51	48	30
CPMB	By Testing	78	77	41	59	67	41
CTME		340	198	201	201	202	169
EIBMA	Primary and Age	10	24	11	25	24	23
ETE		305	396	735	566	222	250
CEPAV	By Testing		44	169	180	70	154
Centre a	By Testing				240	226	270
BOUAKE							
CETI	Cinquième	505	491	502	570	595	279
CETC	Troisième	505	491	502	570	595	293
CETF	Troisième	136	188	155	138	122	138
AGBOVILLE							
CETF	Ciquième	48	38	41	46	53	57
CFP-All	Primary/Age	676	746	817	1,002	694	840
CTA-All	Age	115	110	133	179	212	220
TOTAL		4,785	5,123	5,811	6,292	5,387	5,728

Source: Enseignement Technique, Formation Professionnelle, Perfectionnement

Permanent, Ministere De L'Erseignement Technique Et De La Formation Professionnelle.

[1]Two new Lycée Technique in Bouake and Yopougon will add enrollments of 2,140 in 1975/76 and beyond.

[2]Admission standards are given when available. Reporting of a grade level implies successful completion of that grade level. Where age is mentioned, the normal limitation is 17 to 25 or 30 years old.

[3]Abbreviations used:

LTA	Lycée Technique d'Abidjan
GTA	Groupe Technique d'Accueil
CETI	Collège d'Enseignement Technique Industrial
CETC	Collège d'Enseignement Technique Commercial
CETF	Collège d'Enseignement Technique Féminin
CTUEF	Centre Technique Urbain d'Enseignement Féminin
CFPMB	Centre de Formation et de Perfectionnement des Métiers du Bâtiment
CHS	Centre Horloger Suisse
CPL	Centre Poids Lourds
CPMB	Centre de Perfectionnement aux Métiers du Bois
CTME	Centre Technique de la Mécanique et de l'Electricité
EIBMA	Ecole Ivoirienne de Bijouterie et des Métiers Annexes
ETE	Ecole des Techniciens d'Encadrement
CEPAV	Centre de Perfectionnement Audio-Visuel
Centre a	Centre d'Alphabétisation
CFP	Centre de Formation Professionnelle
CTA	Centre Technique Artisanal

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those who have not completed the first cycle of secondary. With this situation in existence, there will probably be few places available in technical schools for those students who complete the proposed three year post primary cycle without a substantial expansion or restructuring of technical education.

LABOR MARKET

EDUCATION LEVEL AND EMPLOYMENT CLASSIFICATION

There is a definite attempt in the Ivory Coast to tie employment classifications to education levels. Table 5 gives current employment classifications (for the private and public sectors), proposed classifications and associated minimum education levels set by the Ministere du Plan. The ordering of the jobs are apparent in the context of the education requirements. The exception is that there are no fixed education requirements for the top post.

To obtain employment in higher job classifications, considerably more education is necessary than completion of primary school or some secondary training. However, in examining the actual alignment of education levels and employment classifications, as reported in Table 6 for 1971, one can see a considerable number of persons holding positions for which they are not "qualified." For those reporting educational backgrounds, 60% of the Cadre-Technicien did not have sufficient education. The comparable figures for Maitrise and Employes Qualifiesare 73% and 65%, respectively. These types of promotions in the past are probably due to two prime factors:

1) the inavailability of appropriately trained people in the past, and
2) the likelihood that experience is an adequate substitute for education.

Of the 131,267 jobs in the private sector in 1971, only 15% required education beyond the primary level and over 100,000 jobs required no education at all. One should remember that these employment figures represent the private sector only and do not include the public sector, self-employment, or the traditional agriculture sector. It should be clear that the latter two categories would have no formal education requirements. In 1973,

TABLE 5

Actual Employment Classifications Compared with Proposed Employment Classifications and Education Levels

ACTUAL EMPLOYMENT CLASSIFICATION	PROPOSED EMPLOYMENT CLASSIFICATION	PROPOSED MINIMUM EDUCATION LEVEL
Direction (D)		
	Main d'Oeuvre Supérieurement Qualifide	Completed Secondary plus 5 additional years
Cadre-Techniciens (C-T)		
	Techniciens Supérieurs	Completed Secondary plus 3 additional years
Maitrise (M)		
	Techniciens	Completed Secondary or completed Troisième (BEP) plus 2-3 years tech. training
Ouvriers Qualifiés* (OQ)		
	Main d'Oeuvre Qualifide	Completed Cinquième plus 2-3 years of technical training (CAP)
Employes Qualifiés (EQ)		
Employes Non Qualifiés (ENQ) Ouvriers Spécialisés (OS) Manoeuvres (MO)	Main d'Oeuvre Non Qualifide	

Source: Working document of the Ministere Du Plan.

*The education level for this employment classification may be inappropriate as evidenced.

TABLE 6

Actual Employment Classifications with Actual Education Levels, 1971

ACTUAL EDUCATION LEVELS (certif.)		ACTUAL EMPLOYMENT CLASSIFICATION[1]							
	(D)	(C-T)	(M)	(OQ)	(EQ)	(ENQ)	(OS)	(MO)	Others
Illiterate	130[2]	13	88	3,247	139	2,811	10,962	36,373	
Some Primary	120	28	244	1,454	821	1,518	2,185	1,330	
Completed Primary (CEPE)	190	103	628	1,195	2,311	2,575	2,060	1,119	
Less than 4 yrs. of secondary	75	127	245	312	740	559	525	286	
Completed First Cycle (4 yrs.) Secondary (CAP, BEPC)	260	493	1,104	540	1,587	556	163	40	
Some 2nd Cycle of secondary (BEC,BEI,BEP)	177	289	363	75	325	21	7	5	
Completed Secondary(BAC,BSEC)	357	369	346		175	12			
IUT	20	64	42						
Grand Ecoles	588	921	104		32				
Non-Declared	657	1,370	2,523	7,810	3,301	4,051	12,178	15,837	993
TOTAL	2,574	3,777	5,687	14,633	9,433	12,103	28,070	54,990	993

Source: Extracted from manpower surveys of the Ministere Du Plan.

NOTES: See next page, please.

NOTES: [1]Employment Classification Abbreviations: (D), Direction; (C-T), Cadre Techniciens; (M), Maitrise; (OQ), Ouvriers Qualifiés; (EQ), Employes Qualifiés; (ENQ), Employes Non Qualifiés; (OS), Ouvriers Spécialisés; (MO), Manoeuvres.

[2]Total number of persons for each employment classification and education level.

47,067 were employed in the public and semi-public sector and of these positions, 18% were in classifications which would have educational requirements.

EMPLOYMENT LEVELS

The employment level for 1971 in Table 6 is a misleading indicator of potential employment opportunities for Ivorians. As reported in Table 7, one can see that less than 50% of the positions in this sector are held by Ivorians. There are nearly an equivalent number of non-Ivorian Africans employed in the Ivory Coast.

Table 7 contains a breakdown of employment by sex, nationality and employment classification. One can obtain several interesting insights into the operation of the labor market in the Ivory Coast. For Ivorians, there are nearly 30 times as many men as women employed. However, men outnumber women by only 10 to 1 in those positions requiring a reasonable amount of education. For non-Africans there are only three times as many men as women (6,167 to 2,454). However, the ratio is higher for the higher positions. There are very few non-Ivorian African women employed (360 women to 58,785 men).

In examining employment by occupation and nationality, one can observe that 81% of the non-Africans hold top positions (Direction, Cadre-Technicien, and Maitrise). The comparable figures for Ivorians and other Africans are

TABLE 7

Employment Levels By Sex, Nationality and Employment Classification, 1971

EMPLOYMENT CLASSIFICATION	IVORIANS		AFRICANS NON-IVORIAN		NON-AFRICAN		NOT DECLARED	
	Men	Women	Men	Women	Men	Women	Men	Women
Direction	325	35	220	13	1,752	217	11	1
Cadres-Techniciens	634	61	251	19	2,555	256	20	1
Maitrise	2,490	183	707	36	1,604	584	60	25
Employes Qualifiés (Cat. 5 et +)	5,569	736	1,554	113	151	1,305	28	17
Employes Non-Qualifiés (< Cat. 5)	6,628	473	4,790	68	16	27	83	18
Ouvriers Qualifiés (Cat. 5 et +)	10,259	155	3,906	29	93	60	126	5
Ouvriers Spécialisés (Cat. 3 et 4)	17,208	152	10,200	49	7	3	425	26
Manoeuvres (Cat. 1 et 2)	16,370	255	37,041	26	3		1,292	5
Apprentis	640	33	153	4	6	.2	22	3
Non Declares	4	2	3	3			82	36
TOTAL	60,127	2,083	58,785	360	6,167	2,454	2,149	135

Source: Extracted from manpower surveys of the Ministere Du Plan.

6% and 2%, respectively. Of the 11,922 top positions for which information on nationality is available, 31% are held by Ivorians, 10% by other Africans, and 59% by non-Africans. For the 9,388 "Employes Qualifiés" positions recorded, 67% are held by Ivorians, 18% by other Africans, and 15% by non-Africans. In 1974, Ivorians held 49% of the 5,429 "Direction" positions, 15% of the 2,697 "Cadre-Techniciens" positions, 81% of the 5,012 "Maitrise" positions and 71% of the 8,535 "Employes Qualifiés" positions.

SALARY LEVELS

An examination of salary levels reveals further insights into the labor market. In Table 8, salary levels are reported for different employment classifications, education levels, nationalites, and regions. The major general trends observable from the data in the table are: increasing salaries with increasing education, increasing salaries with higher employment positions, and higher salaries for non-Africans in similar positions with similar education levels.

For the "Direction" category there is a marked increase in salaries as education level increases. For example, Ivorians who completed the first cycle of secondary had salaries 63% higher than those with only some secondary education and those who completed secondary had salaries nearly three times higher than those with only some secondary. In general, salaries for non-Africans were two to three times higher than those of Ivorians with the same education level.

A digression is in order. Different salaries for the same job and some education may represent a variety of different factors which have not been investigated. One potential factor is different levels of experience. There is an increasing presence of Ivorians in positions

TABLE 8

Salary Levels by Education Level, Nationality, and Employment Classification, 1971 (CFA Francs*)

EMPLOYMENT CLASSIFICATION	REGION	NATIONALITY	EDUCATION LEVELS (certificate)										
			Illiterate	Some Primary	(CEPE) Completed Primary	(CAP) Some First Cycle	(CAP) (BEPC) Completed 1st Cycle	(BAC) (BEI) (BEP) Some 2nd Cycle	(BAC) (BSEC) Completed Secondary	BUT	Grandes ecoles, superieur	Average
DIRECTION	Abidjan	Ivorian (IV)	—	24,999	46,665	46,665	24,999	68,749	121,249	—	191,666	116,263
		African, Non-Ivorian (ANI)	36,666	—	56,249	—	—	—	—	—	187,499	70,506
		Non-African (NA)	137,499	153,570	127,082	149,999	163,042	188,548	194,078	—	214,704	198,537
	Interior	IV	—	—	62,499	—	89,999	—	—	—	112,499	68,626
		ANI	—	—	—	—	66,665	—	—	—	—	45,520
		NA	—	—	110,713	129,999	182,499	132,141	154,544	—	192,856	162,521
CADRE-TECHNICIENS	Abidjan	IV	—	—	105,768	82,856	80,440	97,058	116,163	92,856	141,666	108,721
		ANI	—	—	99,999	112,499	99,999	91,870	99,999	—	129,219	115,119
		NA	—	199,999	171,738	193,182	174,999	181,817	166,122	174,999	195,377	185,127
	Interior	IV	—	—	—	—	—	—	—	—	—	76,679
		ANI	—	—	—	—	—	—	—	—	—	—
		NA	—	—	142,749	—	190,624	159,999	187,499	—	172,916	179,976
MAITRISE	Abidjan	IV	44,999	55,259	59,799	57,769	58,029	57,433	88,589	72,727	91,666	59,296
		ANI	29,999	58,035	61,289	52,499	70,993	66,666	52,082	—	47,499	63,621
		NA	—	156,249	130,999	144,999	137,178	151,822	187,777	179,166	142,104	141,667
	Interior	IV	35,999	62,499	95,881	61,110	43,695	49,999	—	—	—	43,266
		ANI	—	—	92,082	—	42,856	—	—	—	—	44,583
		NA	—	166,943	157,142	172,916	134,721	134,090	110,869	—	—	161,741
EMPLOYES QUALIFIÉS	Abidjan	IV	29,726	34,176	34,702	33,626	37,587	45,344	49,231	—	—	35,278
		ANI	25,009	31,193	36,981	36,637	42,500	54,166	66,870	—	—	34,727
		NA	—	57,812	72,702	104,344	82,682	100,861	94,166	—	91,670	92,033
	Interior	IV	28,307	32,999	25,013	31,665	36,729	46,665	—	—	—	32,448
		ANI	24,982	26,666	31,621	28,695	29,450	—	—	—	—	28,128
		NA	—	—	68,828	74,999	72,114	74,999	93,749	—	—	63,824

TABLE 8 (continued)

EMPLOYMENT CLASSIFICATION	REGION	NATIONALITY	EDUCATION LEVELS (certificate) Illiterate	Some Primary	(CEPE) Completed Primary	(CAP) Some First Cycle	(CAP) (BEPC) Completed 1st Cycle	(BEC) (BEI) (BCP) Some 2nd Cycle	(BAC) (BSEC) Completed Secondary	IUT	Grandes ecoles, supérieur	Average
EMPLOYES NON QUALIFIÉS	Abidjan	Ivorian (IV)	15,143	19,340	20,845	22,121	25,536	24,008	—	—	—	20,370
		African, Non-Ivorian (ANI)	14,540	16,814	17,830	20,280	21,553	—	—	—	—	15,472
		Non-African (NA)	—	—	—	—	—	—	—	—	—	—
	Interior	IV	14,501	15,095	17,947	19,612	23,724	—	—	—	—	16,283
		ANI	13,955	14,394	16,038	15,865	37,390	—	—	—	—	14,517
		NA	—	—	—	—	—	—	—	—	—	—
OUVRIERS QUALIFIÉS	Abidjan	IV	25,179	26,060	28,226	34,106	33,684	45,013	—	—	—	27,141
		ANI	24,803	25,777	30,019	28,087	33,431	35,000	—	—	—	28,199
		NA	—	—	58,819	—	120,760	—	—	—	—	77,529
	Interior	IV	25,273	26,349	26,174	25,222	27,913	—	—	—	—	26,685
		ANI	24,764	25,540	30,860	41,440	—	—	—	—	—	24,916
		NA	—	—	—	—	—	—	—	—	—	—
OUVRIERS SPÉCIALISÉS	Abidjan	IV	17,018	20,237	16,331	16,553	21,485	—	—	—	—	17,821
		ANI	15,337	18,725	17,216	16,211	17,005	—	—	—	—	16,257
		NA	—	—	—	—	—	—	—	—	—	—
	Interior	IV	16,332	15,594	21,581	20,854	18,000	—	—	—	—	17,770
		ANI	13,760	14,050	16,590	—	—	—	—	—	—	14,192
		NA	—	—	—	—	—	—	—	—	—	—
MANOEUVRES	Abidjan	IV	13,079	13,712	13,556	13,688	13,721	—	—	—	—	13,328
		ANI	9,089	12,635	10,490	9,252	11,333	—	—	—	—	9,520
		NA	—	—	—	—	—	—	—	—	—	—
	Interior	IV	10,638	14,415	13,844	19,000	—	—	—	—	—	11,145
		ANI	7,741	8,604	9,040	—	—	—	—	—	—	7,809
		NA	—	—	—	—	—	—	—	—	—	—
APPRENTIS	Abidjan	IV	10,413	8,899	8,607	13,003	17,207	—	—	—	—	10,003
		ANI	12,662	9,371	7,750	—	—	—	—	—	—	10,319
		NA	—	—	—	—	—	—	—	—	—	—
	Interior	IV	8,154	< 5,000	< 5,000	—	—	—	—	—	—	5,307
		ANI	9,570	—	—	—	—	—	—	—	—	9,245
		NA	—	—	—	—	—	—	—	—	—	—

Source: - Extracted from manpower surveys of the Ministere Du Plan. * The exchange rate is approximately 250 CFA Francs = $1 U.S.

requiring higher levels of education. As this is a general increasing trend, one might expect that Ivorians are less experienced and would receive lower salaries. Related to the possible payment to different levels or experience is a general point derived from free-market analysis. In an economy with freely operating labor market, wages will tend to reach an equilibrium through the forces of supply and demand at that level at which the wage is equated with the value of marginal product of the employee. Therefore, if two individuals have the same job title and educational background salary, differences would be attributed to differences in productivity. Different levels of experience may be a partial explanation for productivity and, hence, salary levels.

An alternative explanation to competitive market theory is that individuals or groups may be able to exert a great deal of power in the economy. Wages and prices would not reflect equilibrating forces in supply and demand but rather market power -- the ability to set prices or wages. Individuals receiving higher salaries for similar jobs and educational background would then have these salaries through an ability to manipulate the market.

The particular perspective one has results in very different policy objectives. For example, recalling the rates of return to completed secondary education, freely operating markets would place a great demand on expansion of secondary facilities. Under the free market theory, the higher wages paid to individuals with increasing education reflects a higher productivity of these individuals and a market demand for the services of these individuals. However, if the market is not competitive and there exists groups with differential power in the economy, two situations are possible: (1) power is used to reduce the number of secondary openings to restrict competition for higher paying jobs which do reflect higher productivity levels, and (2) power is used to artificially raise salary levels for persons with secondary

education and schooling is a convenient mechanism for allocating the salary difference. In the former case, a push to increase investment in secondary education will have economic payoffs. In the latter case, if secondary schooling is increased it will not result in better positions. The salaries are only artificially higher, reflecting relative power, and a new screening mechanism will be erected to keep the salaries of individuals in this group higher.

In examining the "Cadre-Technicien" category, one notices an interesting pattern of wages. With the exception of a substantially higher salary (50%) for Ivorians with "grande ecole" compared with lower levels of education, the salaries tend to be randomly distributed over education levels. Additionally, salaries tend to be higher for the "Cadre-Technicien" category than the "Direction" category. As with all employment categories, the salaries of non-Africans are substantially higher than those of Ivorians.

The "Maitrise" category reveals large salary increases to literacy (25%) and completion of secondary (55%) for Ivorians. Between these two points, salaries remain quite stable. In most other categories, with the exception of "Manoeuvre" there are substantial salary increases for the highest education levels for individuals in that category. For example, individuals in "Employes Qualifies" receive higher salaries with completion of secondary school or completion of the first cycle and some technical training. Technical schooling also results in large salary increases in the "Ouvrier Qualifies" and "Ouvrier Specialises" categories.

A general conclusion one draws from the analysis of the salary data is economic returns have been received only by those individuals who complete some technical training or the secondary system.

LABOR DEMAND AND SUPPLY

We have examined the potential reasons for the social demand for additional education, the flow of students through the secondary and technical system, and a variety of characteristics of the Ivorian labor market. It is now necessary to match potential labor market demand to the supply of labor. Again, it should be remembered that we are investigating the labor market in the private sector only and do not have information (except for 1973) for the public or semi-public sector. Additionally, there is no information regarding employment in traditional agriculture (farming) or the opportunities for self employment. As a first step to examining labor demand and supply, we analyze past employment levels for several years and for various employment classifications. We then discuss the labor demand and supply situation in 1973, projected labor demand for 1976-80 and 1981-85 and the potential supply for 1976.

EMPLOYMENT LEVEL HISTORY

Data were available for employment levels for a six year period for the private sector (1967-1971 and 1974) and for one year for the public and semi-public sector (1973). The data is divided into several employment classifications and presented in Table 9.

Two major items are immediately apparent from the Table. Employment rose from 1967 through 1970 at which point a peak employment level of 146,315 and declined in 1971 to 132,130 and in 1974 to 120,861. The second item is that Ivorians constitute approximately 50% of the labor force in all years.

The major reason for the decline in employment is the change in the level of "Ouvriers Specialises" from 38,266 in 1970 to 22,402 in 1974.

TABLE 9

Employment Levels By Employment Classification for Various Years

EMPLOYMENT CLASSIFICATION	1967		1968		1969		1970		1971		1974		1972* Public & Semi-public	
	TOTAL	Ivorian	TOTAL	Ivorian	TOTAL	Ivorian	TOTAL	Ivorian	TOTAL	Ivorian	TOTAL	Ivorian	TOTAL	Ivorian
Direction	1,616	115	1,739	155	1,603	188	1,809	201	2,574	360	5,429	2,685	350	144
Cadres-techniciens	2,915	418	3,219	522	3,431	499	3,701	768	3,777	695	2,697	400	2,171	734
Maitrise	4,298	1,490	4,858	1,980	5,291	1,721	5,718	2,641	5,687	2,673	5,012	4,081	2,468	1,786
Employes qualifies	7,661	5,118	6,626	4,007	6,865	3,235	6,362	4,151	9,433	6,305	8,535	6,071	3,953	3,484
Employes non qualifies	10,944	7,640	14,444	10,856	13,622	8,327	15,240	11,594	12,183	7,101	12,305	7,186	4,401	3,243
Ouvriers qualifies	11,146	8,134	12,519	8,520	12,297	6,791	13,986	9,741	14,633	10,414	10,605	7,404	5,983	4,871
Ouvriers specialises	27,129	18,071	31,088	19,031	31,684	13,791	38,266	23,186	28,070	17,360	22,402	14,372	9,939	7,582
Manoeuvres	62,741	21,159	62,286	19,540	60,654	13,427	59,738	19,858	54,990	16,623	53,401	16,377	17,755	4,851
Apprentis	1,234	755	1,121	759	1,124	887	995	764	863	673	475	393	47	42
T O T A L	129,684	62,900	137,680	65,386	136,571	48,506	146,315	72,894	132,130	62,204	120,861	56,938	47,067	26,782

Source: Extracted from manpower surveys of the Ministere Du Plan.
* This was the only employment data available for the public and semi-public sector. All other data are for the private sector exclusive of self-employment.

This is a position for which no special education is required. There were also declines of approximately 20% in other areas not requiring special education. Between 1970 and 1974 there was a substantial increase in Ivorians employed in the "Maitrise" category (2,641 in 1970 to 4,085 in 1974) and the "Employes Qualifies" category (4,151 in 1970 to 6,071 in 1974). Both of these positions typically have education requirements. Additionally, there was a substantial increase in the number of Ivorians employed in the "Direction" category (201 in 1970 to 2,685 in 1974).

When one breaks down the total employment changes into job classifications, one finds that total employment has declined due to substantial drops in employment in relatively unskilled positions. Simultaneously, there has been an increase in employment in the more skilled categories. This shift in employment may be representative of a shift to more capital-intensive production which substitutes for unskilled persons. While this is possibly an "efficient" economic decision, a reduction of employment opportunities in the face of growing investment in education and training could create severe problems. The shift in employment opportunities is consistent with the high rates of return to secondary and technical education and the high social demand for these types of education.

The difficulty in undertaking a complete analysis of employment opportunities for school leavers is apparent in the total number of Ivorians employed in the public and semi-public sector in 1973 (26,787 compared with 56,938 in the private sector in 1974). It is clear that a complete analysis of all economic sectors would lead to a better understanding of labor demand and supply relations.

EQUILIBRIUM IN THE LABOR MARKET

The words "equilibrium" and "labor market" are practically contradictory if one examines the data presented in Table 10. The data are divided according to five employment classifications and several industry classifications which are standardly used in the Ivory Coast. In examining the data one can see that a labor shortage existed in every job classification for virtually all of the industries in 1973. The demand in 1973 for "Cadre-Techniciens," "Maitrise," "Employes Qualifies," and "Employes Non-Qualifies," was estimated to be 898, 982, 3390, and 6857, respectively. However, the estimated supply for these classifications was only 251, 627, 979, and 1507, respectively. One of two possibilities exists when a shortage occurs: non-Ivorians are hired for the position or someone who is not as qualified as desired is promoted or hired.

If one compares the labor demand in 1973 with employment levels reported in Table 9 for 1971 and 1974, one concludes that most of the demand must have been for replacements for retiring workers as total employment retracted in all job classifications except "Maitrise." It is also interesting to note that there is a shortage of labor in those job classifications which are alleged to have no education requirements. It is possible that some level of education or some skill is stressed for these jobs. If it is true that some level of education is desireble for these positions, then it may be possible that the post-primary system will aid in providing the extra education necessary. It is within these categories that the greatest demand is estimated for 1976-80 and 1981-85.

Reflecting back to rate of returns, it is possible that the high rates of return to completion of the first cycle of secondary or technical

TABLE 10

Employment Levels (1971), Demands (1973, 1976-80, 1981-85) and Supply (1973, 1976) by Employment Classification and Industry Classification

INDUSTRY CLASSIFICATION	EMPLOYMENT CLASSIFICATION DIRECTION		
	Level[1] 1971	Demand[2] 1976-80	Demand[2] 1981-85
T O T A L	2,574	2,919	3,602
Forestry, Breeding	43	313	357
Geology, Mines, Quarries	4	2	3
Construction	37	55	44
Wood, Plastics	27	43	44
Textile	18	27	30
Leather	1	1	1
Transformation of Agricultural Products	16	24	31
Chemistry	3	8	12
Metals, Mechanics	26	75	83
Electricity	8	15	17
Transportation, Freight	11	18	21
Graphic Arts	4	5	6
Misc. Technical	1	2	3
Commerce	402	1,096	1,499
Tourism, Hotels		71	88
Domestic		4	4
Economics	16	17	21
Office		26	28
Judicial	1,790	1,053	1,234
Teaching, Research	39	7	9
Medical, Social	58	39	50
Literature	10	4	4
Miscellaneous	60	12	13

TABLE 10 (cont'd)

Employment Levels (1971), Demands (1973, 1976-80, 1981-85) and Supply (1973, 1976) by Employment Classification and Industry Classification

INDUSTRY CLASSIFICATION	EMPLOYMENT CLASSIFICATION CADRE-TECHNICIENS					
	Level[1] 1971	Demand[3] 1973	Supply[3] 1973	Demand[2] 1976-80	Supply[4] 1976	Demand[5] 1981-85
T O T A L	3,777	898	251	3,004	540	3,508
Forestry, Breeding	290			136		167
Geology, Mines, Quarries	95	201		19		20
Construction	248	66		194		155
Wood, Plastics	54	10		58		53
Textile	25	13		89		99
Leather	6	2		10		11
Transformation of Agricultural Products	34	8		69		86
Chemistry	52	10	1	70	21	90
Metals, Mechanics	286	71	77	238		261
Electricity	154	53	11	137	24	142
Transportation, Freight	199	39	13	257	22	310
Graphic Arts	23	6		14		15
Misc. Technical	19			43		47
Commerce	489	132	35	421	28	542
Tourism, Hotels				131		159
Domestic				2		3
Economics	240	42	55	236	106	299
Office		73		325	197	506
Judicial	1,214	347	59	333	160	393
Teaching, Research	131	—	—	20		27
Medical, Social	73	—	—	34		44
Literature	27	4		28		33
Miscellaneous	120	2		41		47

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TABLE 10 (cont'd)

Employment Levels (1971), Demands (1973, 1976-80, 1981-85) and Supply (1973, 1976) by Employment Classification and Industry Classification

INDUSTRY CLASSIFICATION	EMPLOYMENT CLASSIFICATION MAITRISE					
	Level[1] 1971	Demand[2] 1973	Supply[3] 1973	Demand[2] 1976-80	Supply[4] 1976	Demand[2] 1981-85
TOTAL	5,687	982	627	7,168	1,426	8,594
Forestry, Breeding	421			42		79
Geology, Mines, Quarries	24	13	4	25		28
Construction	353	86	50	1,201	71	1,415
Wood, Plastics	160	26		101		94
Textile	85	23	18	94	19	105
Leather	15	3		20		23
Transformation of Agricultural Products	34	6		101		129
Chemistry	60	14	9	219	30	254
Metals, Mechanics	622	142	30	806	96	1,164
Electricity	300	50	29	424	84	426
Transportation, Freight	196	31		238		292
Graphic Arts	46	11		29		32
Misc. Technical	17			780		991
Commerce	640	110	78	458	93	557
Tourism, Hotels				215		265
Domestic				11		16
Economics	304	74	36	187	5	251
Office		266	310	1,068	916	1,285
Judicial	1,609	118	57	170	102	206
Teaching, Research	324	----	----	85		109
Medical, Social	89	----	----	58		67
Literature	34	9		24		30
Miscellaneous	294		6	812		1,061

TABLE 10 (cont'd)

Employment Levels (1971), Demands (1973, 1976-80, 1981-85) and Supply (1973, 1976) by Employment Classification and Industry Classification

INDUSTRY CLASSIFICATION	EMPLOYMENT CLASSIFICATION EMPLOYES QUALIFIES					
	Level[1] 1971	Demand[3] 1973	Supply[3] 1973	Demand[2] 1976-80	Supply[4] 1976	Demand[2] 1981-85
TOTAL	9,433	3,390	979	18,359	1,517	20,506
Forestry, Breeding	1,556	6		150		169
Geology, Mines, Quarries	38	6		15		18
Construction	820	378	14	1,927	13	1,554
Wood, Plastics	453	224	1	1,412		1,239
Textile	38	72	35	381	24	435
Leather		13		56		64
Transformation of Agricultural Products	114	21		195		244
Chemistry	101	37		428		372
Metals, Mechanics	1,226	592	181	3,492	221	3,876
Electricity	820	166	100	1,326	159	1,392
Transportation, Freight	1,264	538	37	2,494	31	2,831
Graphic Arts	38	43		110	8	118
Misc. Technical	764			56		63
Commerce	415	395		1,350		1,831
Tourism, Hotels	104			416		524
Domestic	28			247		297
Economics	519	58	140	461	180	643
Office	1,518	774	425	3,436	796	4,329
Judicial	47	58		69		82
Teaching, Research	85			45		56
Medical, Social	160			161		195
Literature	28	10	3	86	57	111
Miscellaneous	76	5	6	44	8	61

TABLE 10 (cont'd)

Employment Levels (1971), Demands (1973, 1976-80, 1981-85) and Supply (1973, 1976)
by Employment Classification and Industry Classification

INDUSTRY CLASSIFICATION	EMPLOYMENT CLASSIFICATION Employes Non Qualifies, Ouvriers Qualifies, Ouvriers Specialises, Manoeuvres, and Apprentis					
	Level[1] 1971	Demand[1] 1973	Supply[1] 1973	Demand[2] 1976-80	Supply[4] 1976	Demand[2] 1981-85
TOTAL	114,387	6,857	1,507	70,362	1,980	51,870
Forestry, Breeding	14,932			14,944		18,277
Geology, Mines, Quarries	188	55		58		70
Construction	6,054	865	184	3,138	125	2,365
Wood, Plastics	5,900	495	183	2,568	93	2,253
Textile	3,708	777	22	3,354	28	3,788
Leather	390	37		358		405
Transformation of Agricultural Products	1,535	135	11	1,857	10	2,329
Chemistry	945	89		1,143		1,507
Metals, Mechanics	9,184	993	227	3,823	557	4,221
Electricity	2,135	228	48	1,270	48	1,198
Transportation, Freight	28,598	1,535	129	28,662	73	30,835
Graphic Arts	519	62		214		229
Misc. Technical	44,186			42		47
Commerce	1,915	1.174	30	2,034	72	2,884
Tourism, Hotels				720		906
Domestic	520			3,427		4,114
Economics	388	12		135	69	180
Office	496	332	673	2,068	968	2,584
Judicial	250	15		8		12
Teaching, Research	19			18		21
Medical, Social	574			117		139
Literature	105	46		124		165
Miscellaneous	2,016	7		280	7	341

NOTES FOR TABLE 10:

[1]Extracted from manpower surveys of the Ministere Du Plan.

[2]Les Besoins En Main D'Oeuvre De L'Economie Ivoirienne, 1976/80, 1981/85, Office National De Formation Professionnelle, Ministere De L'Erseignement Technique Et De La Formation Professionnelle and Direction Des Etudes De Development, Ministere Du Plan.

[3]Besoins En Main D'Oeuvre Et Ressources Fournies Par Les Establissements De Formation, Bilan 1973; Office National De Formation Professionnelle, Ministere De L'Enseignement Technique Et De La Formation Professionnelle.

[4]Preliminary Documentation, Office, etc. (copy from [3], above).

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training was caused by non-market restrictions of wage levels for workers with less education. These persons tend to dominate the lower level positions and it is possible that the wages paid are too low to attract persons from other occupations.

In examining the five year labor demand forecasts for 1976-80 and 1981-85 and the estimated labor supply for 1976, one can obtain some understanding for the potential shortages with respect to employment and industry classifications. Assuming that the five year demand forecasts imply an equal demand in each year, there will be an overall match for "cadre-techniciens" and "maitrise." In the former classification, the five year demand is for 3,004 and the 1976 supply is 540; an approximate five-year shortage of 300 persons. For the "maitrise" category, the five-year demand estimate is 7,168 while the 1976 supply is 1,426, resulting in virtually no shortage. However, for both of these job classifications the impacts on industries is rather dispersed. There is likely to be a labor surplus in some industries such as "office" and "judicial." However, there will be major problems in forestry, breeding, construction, wood, plastics, textiles, leather, chemistry, metals, and transportation.

The shortages of labor are much greater in the other two employment classifications. The five-year demand estimate for "Employes Qualifies" is 18,359 while the 1976 supply is only 1,517, with a resulting five-year shortage of 10,774. In the "Employes nonQualifies" category, the five-year demand estimate is 70,362 while the 1976 supply is only 1,980, with a resulting five-year shortage of 60,462. The industries for which the largest growth and labor shortage are forecast are similar to those mentioned in the previous paragraph. Such a large shortage in an employment classification for which relatively little education is required indicates a clear problem. Further investigation would be necessary to determine if the shortage was caused by inadequate wages and effective job requirements for more education than originally thought necessary. The outcome of such an investigation would have profound implications for future investments in education.

One must also realize that the forecasted labor demand reflects estimates of substantial growth in the Ivorian economy. While employment has basically retracted in the first half of the 1970s, it is estimated that during the second half of the 1970s, employment will double compared with the 1971 employment level. A similar increase is forecast for the first half of the 1980s. Therefore, it is assumed that three times the number of people employed in 1971 will be employed in 1985.

It would seem that with such large labor shortages that appropriately trained Ivorian students would have no problems obtaining employment. However, this is not always the case and there is no firm data with which one can investigate the extent of the problem.

SUMMARY AND CONCLUSIONS

The social demand for education beyond primary levels is very high. This demand is evident by an observation of the large numbers of students repeating CM2 in order to obtain another chance to enter secondary school. The cause for this desire is probably the large salary increments and the subsequent high rate of return available to students who either complete the first cycle of secondary, the entire secondary system, or some technical training program. However, in terms of employment in the private sector, it is potentially socially wasteful to complete primary school or some secondary education as compared with obtaining some primary education. It would seem that the proposed three-year primary education would not lead to very different job prospects and would only be a temporary and unsatisfactory solution to the high social demand for post-primary education. This demand is probably more of a demand for higher paying jobs. However, these remarks must be qualified by the implication of the large forecasted labor shortage in relatively less skilled positions. The implication is that these positions may have higher education requirements than predicted.

The potential policy outcomes of this forecasted shortage is that post-primary education would be economically beneficial if training was directed toward those job categories with large shortages, and if salaries in these categories were raised. Furthermore, an expansion of the technical school system would help to reduce the predicted shortage of "Employes Qualifies."

The only potential long term solution to a reduction in the social demand for education is a better matching of training and jobs for which the additional training has an economic payoff to the individual. However, as a final note, it is necessary to realize that the entire thrust of the demand for education and the potential benefits of education are not solely concentrated on employment possibilities.